

Automatic Liquid Nitrogen Dosing System



CRYOTEC presents LINinject[®] 300 series automatic liquid nitrogen dosing system with dosing speed up to 96 000 bottles per hour to pressurize and make inert atmosphere in PET, cans, glass and other type of containers. It is suitable for cold and hot liquids, e.g. oils, water, juices, beer, wine, milk and others.

Intended use

LINinject[®] is intended to create overpressure and inert atmosphere inside a container with still liquids and foods. Inert atmosphere significantly reduces oxidation processes and thus extends shelf life and preserves taste qualities of the product without using food additives.

“Nitrogen breakthrough” in packaging industry

Capability of LINinject[®] to create overpressure and inert atmosphere is fairly a breakthrough in packaging industry. A drop of liquid nitrogen being injected into a container intensively evaporates (boiling temperature -196°C) and turning into a gaseous state increases in volume by 700 times. This physical phenomena allows to do two principal things:

- first, to push out the rest of air and oxygen from a container before closing the cap. This increases the shelf life of the product and preserves original taste qualities.
- second, after cap closing, evaporating nitrogen creates overpressure and thus makes a container tough and solid. This ensures efficient storage, handling and transportation. As well as prevents bottle shrinkage during hot fill packaging.

Nitrogen, as the main component of air, is food safe inert gas, without taste, color and odor. It dissolves poorly in a product and is approved for the use in food industry. LINinject[®] can be efficiently used to pack cold liquids as well as hot tomato sauces, oils, desert syrups, coffee concentrates etc. into PET, cans, glass and other containers.

Description and principles of operation

Automatic liquid nitrogen dosing system LINinject[®] consists of vacuum-insulated cryovessel, vacuum-insulated pipeline, volumetric dosing valve and control unit. Cryovessel is automatically refilled with liquid nitrogen from an external storage tank. Electronic control unit with industrial PLC allows operator to set precise dosing parameters.

Automatic machine is equipped with a 230 liter cryogenic vessel and a 3 meters flexible vacuum-insulated hose. Original design of dosing unit guarantees injection of strictly limited nitrogen dose into a container every time.

The system is designed to operate within modern filling lines, weighing-and-packaging and closing monoblocks. But it also can be used as an independent unit in food and household chemicals bottling and weighing-and-packaging linear belt conveyors. The body of LINinject[®] is stainless steel type 316; original design of the system allows for CIP cleaning.



Technical Specifications

Dosing medium	Liquid nitrogen
Capacity of in-line cryogenic vessel	6 l
Liquid nitrogen dose (min-max)	0.1-1.0 ml
Dosing control	remote
Dosing speed	up to 96 000 dose/hour
PLC Platform	Siemens
Design code	PED
Possibility to connect encoder	provided
All actuators are electromagnetic (without pneumatic items)	
Suitable for use in clean room facilities	

LINinject[®] is environment friendly and meets safety requirements of "Cryogenic equipment. General safety design requirements" (Russian national standard OCT 26-04-2153)
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